97TH CONGRESS } HOUSE OF REPRESENTATIVES { REPT. 97–535
2d Session } { Part 2

# EARTHQUAKE HAZARDS REDUCTION ACT OF 1977 AUTHORIZATION

MAY 17, 1982.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. FUQUA, from the Committee on Science and Technology, submitted the following

## REPORT

[To accompany H.R. 6272 which on May 4, 1982, was referred jointly to the Committee on Science and Technology and the Committee on Interior and Insular Affairs]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 6272) to amend the Earthquake Hazards Reduction Act of 1977 to extend authorizations of appropriations, and for other purposes, having considered the same, report favorably thereon without amendment and recommend that the bill do pass.

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## Purpose of the Bill

The purpose of the bill is to authorize appropriations to the Federal Emergency Management Agency, the U.S. Geological Survey, the National Science Foundation, and the National Bureau of Standards to carry out the provisions of the Earthquake Hazards Reduction Act of 1977 and the Multihazard Research, Planning and Mitigation Program (Public Law 96–472). The program total recommended by the Committee is $63,373 million as shown in the following table. The bill authorizes appropriations of $1.281 million for fiscal year 1983, to the Federal Emergency Management Agency (FEMA) $33.843 million for fiscal year 1983, to the U.S. Geological Survey (USGS); $25.0 million for fiscal year 1983, to the National Science Foundation (NSF); and $0.475 million for fiscal year 1983, to the National Bureau of Standards (NBS) to conduct the National Earthquake Hazards Reduction Program; and to FEMA, USGS, NSF, and NBS "such sums as may be necessary" for fiscal year 1984.

Also the bill authorizes appropriations of $2.774 million to FEMA for fiscal year 1983 to conduct the Multihazard Research, Planning and Mitigation program.

*Earthquake Hazards Reduction Act—Authorization for fiscal year 1983*

| | *Millions* |
|---|---|
| Title I—Earthquake: | |
| FEMA | $1.281 |
| USGS | 33.843 |
| NSF: | |
| Engineering | 17.300 |
| Earth sciences | 7.700 |
| Subtotal | 25.000 |
| NBS | .475 |
| Subtotal | 60.599 |
| Title II—Multihazard program: | |
| FEMA—Evaluation studies | .300 |
| FEMA—Earthquake emergency preparedness | 1.535 |
| FEMA—U.S. Fire Administration (emergency first response program) | .939 |
| Subtotal | 2.774 |
| Total (H.R. 6272) | 63.373 |

## Background and Need

Earthquakes pose a severe threat to the United States. Earthquakes are not, as popularly believed, restricted to the Pacific Coast of our country. The fact is that three of the greatest earthquakes in American history occurred 170 years ago, not on the Pacific Coast, but near the Mississippi River, just where Kentucky, Missouri, and Tennessee meet.

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All or parts of 39 states lie in regions classed as having major and moderate seismic risk. Within these states, more than 70 million people are exposed to earthquake hazards of ground shaking, surface faulting, earthquake ground failures and tsumanis.[1]

Congress found that a coherent earthquake hazards reduction program was needed so that this nation could work in a rational way to reduce the damage done by earthquakes.

Consequently, in 1977 the Congress responded to the problem posed by earthquakes by enacting the Earthquake Hazards Reduction Act of 1977 to reduce the risks to life and property from future earthquakes. The emphasis of the act is on prevention and preparedness as distinct from disaster relief. To achieve this, the act specifies several objectives: (1) development of an earthquake prediction capability along with an understanding of the economic, legal, political and social implications of such a capability; (2) preparation of model codes for land-use decisions; (3) employment of modern design and construction methods to make new and existing structures earthquake-resistant; (4) education of the public and decisionmakers concerning measures that could be taken to reduce hazards from future earthquakes; and (5) a basic and applied research program to advance the science and engineering aspects of earthquake mitigation.

The act established the National Earthquake Hazards Reduction Program (NEHRP), a multi-agency effort to meet the congressionally mandated objectives. The agencies involved are: FEMA; USGS; NSF; and NBS. The roles and responsibilities of these agencies are as follows:

FEMA has primary responsibility to plan and coordinate the NEHRP; assist States and local governments with Earthquake mitigation and preparedness planning; coordinate Federal activities in response to a declared earthquake disaster or emergency; and, develop improved seismic construction codes, standards and practices for the Federal Government, for States and local governments, and for various elements in the private sector.

USGS conducts and sponsors research on (1) the nature of earthquakes, including the physical processes controlling ground shaking, ground failure, surface faulting, and tectonic deformation; (2) earthquake prediction; and (3) induced seismicity. In addition, USGS delineates and evaluates geologic hazards, prepares seismic risk maps; evaluates earthquake predictions; provides data on earthquakes and related occurrences to all interested parties; and sponsors a program of outreach to Federal, State, and local governments and many elements in the private sector.

NSF sponsors basic and applied research on earthquake processes and phenomena in its geophysics program and on earthquake engineering and socioeconomic implications of earthquakes in its civil and environmental engineering program. NSF's societal response program supports research on the responses of individuals, organizations, and communities to earthquakes and related hazards.

NBS contributes research on performance criteria and supporting measurement technology for earthquake-resistant construction. It also provides technical assistance to other organizations in the development

[1] Hays, W. W., ed., 1981, "Facing Geological and Hydrological Hazards: Earth-Science Considerations." U.S. Geological Survey Professional Paper. 1240–B p. B5.

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of design and construction provisions to reduce earthquake hazards in new and existing buildings.

The funding history by agency is provided in table 1. Table 2 provides the breakdown of the fiscal year 1983 budget request by agency effort.

TABLE 1.—COMPARISON OF AGENCY EARTHQUAKE HAZARDS REDUCTION EXPENDITURES FOR FISCAL YEARS 1978 THROUGH 1982

[In millions of dollars]

| Agency | 1978 | 1979 | 1980 | 1981 | 1982 |
|---|---|---|---|---|---|
| FEMA | | | 1.2 | 1.5 | 1.1 |
| USGS | 28.2 | 31.4 | 32.0 | 32.3 | 32.7 |
| NSF | 23.0 | 22.9 | 24.8 | 25.1 | 25.2 |
| NBS | | .4 | .4 | .4 | .475 |
| Total | 51.2 | 54.7 | 58.4 | 59.3 | 59.475 |

TABLE 2.—BREAKDOWN OF FISCAL YEAR 1983 BUDGET REQUEST ACTIVITY AND AGENCY EFFORT

[In millions of dollars]

| | FEMA | USGS[1] | NSF | NBS | Total |
|---|---|---|---|---|---|
| Earthquake strong motion program | | 1.2 | | | 1.2 |
| Fundamentrl studies and data mangement | | 3.4 | 7.7 | | 11.1 |
| Hazard warning | | .1 | | | .1 |
| Prediction | | 14.6 | | | 14.6 |
| Induced seismicity | | 1.2 | | | 1.2 |
| Hazard assessment | | 10.3 | | | 10.3 |
| Engineering | | | 14.8 | 0.475 | 15.275 |
| Research for utilization | | | 2.5 | | 2.5 |
| Preparedness and applications activity | 3.1 | | | | 3.1 |
| Total | 3.1 | 30.843 | 25.0 | .475 | 59.418 |

[1] USGS requests rounded to nearest 10th of a million dollars. Total USGS request for fiscal year 1983 is $30,843,000.

Recently, several reports have been released which highlight the growing importance of and need for a coherent National Earthquake Hazards Reduction Program. A 1981 FEMA Report, "An Assessment of the Consequences and Preparations for a Catastrophic California Earthquake: Findings and Actions Taken," found that this Nation is essentially unprepared for the next catastrophic earthquake that is expected in California within the next 30 years. Moreover, the U.S. Geological Survey issued a report which stated:

> If an earthquake should occur today on the Newport-Inglewood fault near Los Angeles, it would probably cause losses of about $45 billion to buildings and as many as 23,000 deaths . . . A repeat of the 1811–12 New Madrid Mo. earthquake has been estimated to cause (roughly) comparable losses.[2]

Our Nation, with extensive population growth and settlement in large cities located over seismically active zones, has been fortunate to date. However, it is only a matter of time before this national experiences another damaging and quite possibly catastrophic earthquake.

[2] Op. Cit. p. B12.

## Summary of Committee Actions

### A. LEGISLATIVE HISTORY

The Subcommittee on Science, Research and Technology held a joint hearing on the National Earthquake Hazards Reduction Act on March 11, 1982, with the Subcommittee on Science, Technology and Space of the Senate Committee on Commerce, Science and Transportation.

H.R. 6272 was introduced on May 4, 1982 by Mr. Walgren (for himself and Mr. Brown of California).

In Markup on May 5, 1982, the Subcommittee by unanimous voice vote adopted H.R. 6272, for authorization of the Earthquake Hazards Reduction Act and Multihazard Research, Planning and Mitigation Program.

On May 13, 1982 by unanimous voice vote the bill was ordered reported by the Committee.

### B. BUDGET TOTAL

The following Committee Actions are reflected in H.R. 6272:

*Title I—National Earthquake Program*

H.R. 6272 atuhorizes $1,281,000 to FEMA to plan, coordinate, improve seismic codes, promote hazard awareness to state and local governments, and disseminate information. The bill authorizes $33,843,000 to the USGS for earthquake hazards and risk assessment, earthquake prediction, global seismology, induced seismicity and the operation of seismic engineering programs, and $25,000,000 to the NSF to conduct fundamental studies, earthquake engineering, and policy research. The bill also authorizes $475,000 to the Center for Building Technology at NBS to conduct research and develop standards in the seismic design and construction of buildings. The Title I authorization is for two years as the Administration requested.

*Title II—Multihazard Research, Planning and Mitigation Program*

H.R. 6272 authorizes $300,000 to FEMA to conduct several programs on multihazard planning which were authorized in the FY 1981 authorization bill (Public Law 96–472) and have not been completed by FEMA. Also, the bill authorizes $939,000 to the U.S. Fire Administration to conduct the Emergency First Response Program. This program trains firefighters to respond to all types of hazards. In addition, the bill authorizes, $1,535,000 to FEMA to conduct a program of planning, preparedness and mitigation in Southern California and other areas of high seismic risk.

Title II contains a one-year authorization so that the Committee can have the opportunity to closely monitor the efforts and progress that FEMA has made.

### C. INCREASES IN H.R. 6272

The bill, as adopted by the Committee, reflects the following increases in the President's budget:

*Title I.*—The USGS is authorized at $3,000,000 above the Administration's $30,843,000 request to fund several design studies for instrumenting the faults in Southern California.

*Title II.*—Title III is $939,000 over the Administration's request. This represents the same sum authorized last year by the Congress for the emergency first responder program. The Administration has not asked for funding for the USFA this year.

Committee actions on the President's budget request for H.R. 6272 are reflected in the table below:

BUDGET FOR EARTHQUAKE HAZARDS REDUCTION ACT.—AUTHORIZATION OF APPROPRIATIONS TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), U.S GEOLOGICAL SURVEY (USGS), NATIONAL SCIENCE FOUNDATION (NSF) AND NATIONAL BUREAU OF STANDARDS (NBS)

[In millions of dollars]

| | 1982 | | 1983 | | Difference |
|---|---|---|---|---|---|
| | Authorization | Appropriation | Administration request | H.R. 6272 | H.R. 6272/ Administration |
| Title I—Earthquake: | | | | | |
| FEMA | 2.000 | 0.533 | 1.281 | 1.281 | 0 |
| USGS | 34.925 | 32.652 | 30.843 | 33.843 | +3.000 |
| NSF: | | | | | |
| Engineering | 27.150 | 18.200 | 17.300 | 17.300 | 0 |
| Earth sciences | | 7.100 | 7.700 | 7.700 | |
| Subtotal | | 25.300 | 25.000 | 25.000 | |
| NBS | .475 | .475 | .475 | .475 | 0 |
| Subtotal | 64.550 | 58.950 | 57.599 | 60.599 | +3.000 |
| Title II—Multihazard program: | | | | | |
| FEMA—Evaluation studies | .700 | 0 | .300 | .300 | 0 |
| FEMA—Earthquake emergency preparedness | 3.300 | .525 | 1.535 | 1.535 | 0 |
| FEMA—U.S. Fire Administration (Emergency first response program) | .939 | .939 | 0 | .939 | +.939 |
| Subtotal | 4.939 | 1.464 | 1.835 | 2.774 | +.939 |
| Total | 69.489 | 60.424 | 59.434 | 63.373 | 3.939 |

D. SPECIFICATIONS

Minimum and maximum funding levels are included in the bill for the following programs:

Of the $2,774,000 authorized by the bill for FEMA to carry out the multihazard research planning, and mitigation program:

Not less than $300,000 would be available to conduct several multihazard mitigation and response studies;

Such sums as may be necessary, but in any case, not less than $939,000 would be available for use by the U. S. Fire Administration (USFA) to conduct the Emergency First Response Program; and

Not less than $1,535,000 would be available to conduct a program of planning preparedness and mitigation related to the multiple direct and indirect hazards resulting from the occurrence of major California Earthquakes and with respect to other high seismic risk areas in the United States.

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## Committee Views

### TITLE I—EARTHQUAKE PROGRAM

*Federal Emergency Management Agency (FEMA)*

The Committee reemphasizes Congressional intent that FEMA continue as lead agency for the Earthquake Hazards Reduction Program. Of all the agencies involved, only FEMA has the perspective to be able to coordinate all parts of the program. Its role in this program complements its overall mission of emergency management.

However, the Committee has seen considerable evidence in this year's authorization hearings that FEMA continues to have difficulty in performing its leadership role in implementing the National Earthquake Hazards Reduction Program (NEHRP). In addition, the Committee is concerned that the absorption of the NEHRP coordination functions into the State and Local Program at FEMA has placed increased emphasis on Earthquake preparedness plans. This change is causing the earthquake program to become further hidden within an umbrella agency which has become heavily oriented to civil preparedness for military emergencies. Moreover, it has been found that the attention that has been given to the earthquake program has been mostly in preparedness, response and recovery, leaving little attention for important and cost-effective hazard mitigation measures.

The Committee realizes that preparedness activities are necessary to the extent that mitigation measures have not or cannot prevent disasters. Also, the Committee recognizes the importance of response and recovery which activities follow an emergency or disaster and continue until all aspects of life return to acceptable normal or better levels. However, mitigation aspects of the earthquake program cannot be overlooked by FEMA. They represent an investment which can bring about enormous savings of lives and damage when a disaster occurs. As lead agency, FEMA has the key role in seeing that research results are applied where there are opportunities to prepare realistic mitigation plans. Furthermore, and most importantly, FEMA has the perspective to encourage the implementation of the plans, so that the goal of reducing earthquake hazards on a national level is achieved.

Consequently, to carry out the lead agency responsibilities, FEMA must retain sufficient competent staff capable of leading not only the preparedness response and recovery aspect of NEHRP, but also the research and mitigation aspects.

The Committee is informed that FEMA plans to undertake the important task of developing a plan to implement the NEHRP. The "Newmark-Stever Report" of 1976, which provided research options which could be achieved by high, medium, and low funding levels through Fiscal Year 1980, has become outdated. The Committee endorses FEMA's efforts to conduct an intensive review of the NEHRP. However, the Committee feels that this study should be conducted under independent leadership and with appropriate consultation and review. The study should be a plan leading to direct implementation of the NEHRP. The study should include a discussion of the FEMA management structure, the relation of basic re-

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search and applied research, mitigation activities, preparedness activities, public education and dissemination activities. This plan should be viewed as a first step to ensure that the objectives of the Earthquake Act are being effectively achieved with maximum economy and efficiency. The Committee concurs with the Senate Committee on Commerce, Science and Transportation's report (S. Rept. 97–336, which accompanies S. 2273—fiscal year 1983 Earthquake Authorization bill) that the plan needs to be completed in time for Congressional consideration before the submission of the FY 1984 Executive Budget.

*United States Geological Survey (USGS)*

In general, the USGS program is effective, and for the most part funded at an appropriate level. However, the Committee notes with concern that the Administration's budget request significantly reduces the earthquake prediction program. This reduction comes at a time when the threat of an earthquake in Southern California is increasing and there is a greater need for support of the prediction program in that area.

The Committee believes that the high risk areas in Southern California should be adequately instrumented. Therefore, the Committee has authorized an additional $3,000,000 for design studies of a prototype earthquake prediction network for continuous geophysical monitoring of the fault systems threatening major California population centers. It is considered crucial that design studies be carried out as soon as possible to define the most efficient means to proceed with the implementation of the network. The decision to build the network can be deferred to fiscal year 1984 or beyond. However, if geologic conditions indicate some action should be taken quickly, a year or so would be lost without required design studies and money would be wasted in the rush to put equipment in the field.

The Committee applauds the efforts of the USGS to disseminate information developed under their earthquake program to public officials and the private sector. Examples are such excellent publications as "Facing Geologic and Hydrologic Hazards: Earth-Science Considerations" (1981) and "The 1980 Eruptions of Mount St. Helens, Washington" (1981).

*National Science Foundation (NSF)*

Witnesses at the March 11 authorization hearing stated that the technical and scientific knowledge concerning earthquake hazards reduction is significantly ahead of general practice and application. Although often reaching other researchers, knowledge gained through the research process is less generally available to such non-researchers as realtors, developers, lenders, planners, and municipal officials. This was reflected by a limited utilization of such knowledge by State and local officials and by the private sector.

In the past NSF has made grants for the purpose of increased utilization and dissemination of information to the public. This function has now been left to FEMA, with a consequent marked decrease in activity. The Committee recognizes and applauds NSF's funding of the National Information Service for Earthquake Engineering at the University of California, Berkeley, and the California Institute of

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Technology, the Natural Hazards Information Center at the University of Colorado, Boulder, and the Hazards Resource Referral Service (for state and local officials) at the Academy for State and Local Governments. However, the Committee feels that a more aggressive effort by the Foundation must be made to increase utilization and dissemination of information to not only academia, but also, to State and local officials and the private sector.

Also, the Committee wishes to emphasize that the problem-focused research needed to give proper attention to the earthquake hazard mitigation problem is distinctly different from basic research in civil engineering and would remind the National Science Foundation that even though these activities are organizationally placed within the one division, that due attention be given to the different roles of these two functions and that within the problem-focused research the components of applications—oriented research, technology transfer, and research dissemination are all important parts.

The Committee wishes to particularly note the importance of the Societal Response Program. Its studies of how humans become involved in solving earthquake problems could possibly provide the key to improving the dissemination of information on hazards and its utilization by decision makers and the public. In addition, the Societal Response element supports social science, interdisciplinary, and policy-related research on such measures as emergency preparedness, land use planning, building codes, and disaster relief and rehabilitation. As stated in the program scope of the Social Response Program Announcement Booklet, "building codes, and other measures derived from engineering research, are likely to have far greater effects in mitigating the impacts of earthquake as more is learned about the social, economic, political and legal factors that facilitate or hinder their acceptance by threatened communities."

In summary, the Committee recommends that more emphasis be placed on project-oriented activities designed to develop, test, synthesize and demonstrate the efficiency and cost effectiveness of earthquake hazards mitigation strategies. In addition, it is recommended that priority be given to projects that will expedite the utilization of research results to improve seismic safety. The Committee suggests the NSF should increase their efforts to disseminate information to the public and professional communities.

*National Bureau of Standards' Center for Building Technology*

The Federal Government clearly has an important role in sponsoring research and development that could lead to mitigation of earthquake losses. A major goal of such efforts is improvement in building practices.

The National Bureau of Standards has been assigned the following continuing responsibilities:

> Provide technical support to the building community, including the federal agencies involved in construction, "in continuing the development, testing, and improvement of model seismic design and construction provisions suitable for incorporation in local codes, standards (including federal standards) and practices".

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Perform "research on performance criteria and supporting measurement technology for earthquake resistant construction".

Funding for the development of standards has generally been budgeted by FEMA, while funding for research is in the Department of Commerce's budget.

The Center for Building Technology in conjunction with FEMA provides technical support to the Building Seismic Safety Council (BSSC) and the Interagency Committee on Seismic Safety in Construction (ICSSC). The BSSC was established in 1979 as a nonprofit organization comprised of representatives of the public and private sectors whose purpose is to enhance the public's safety by providing a national forum to foster improved seismic safety provisions for use by the building community. The ICSSC was established in 1978 to improve the federal sector's building practices. In 1981 under NBS leadership the ICSSC issued a draft seismic standard for new federal buildings.

The Committee applauds the progress that NBS, FEMA and the BSSC has made in reviewing and improving the document, "Tentative Provisions for the Development of Seismic Regulations for Buildings (1978)." This technical study pulls together 20 years of engineering research to improve seismic standards for building design. The Center for Building Technology has provided strong technical support to BSSC in developing and reporting on the assessment of the tentative provisions in preparation for trial designs. The trial designs will define the benefits and costs of new seismic design and construction practices. These studies will provide the foundation for communities, engineers and state and local governments to alter codes and standards for planning and design of buildings to increase seismic safety. The Committee recommends that an increased commitment be made to the trial building designs using the "Tentative Provisions for the Development of Seismic Regulations for Buildings."

The Committee is concerned that the reduced budget for the FEMA earthquake program may limit FEMA's financial support to the Center for Building Technology. However, it feels that FEMA should continue to support the activities of the Center in technical assistance in development of seismic design and construction provisions. The Department of Commerce also should continue the research on performance criteria and supporting measurement technology that provides the knowledge essential to effective technical support of standards development.

## TITLE II—MULTIHAZARD ACTIVITIES

### *Multihazard Research, Planning and Mitigation Program*

In the fiscal year 1981 authorization bill (Public Law 96–472) the Congress authorized a new program to be included in the Earthquake Hazards Reduction program. This was designated as the Multihazard, Research, Planning and Mitigation Program. In authorizing this program the Committee recognized that research findings and knowledge gained in developing comprehensive mitigation and response plans for earthquake may be applicable to other hazards.

Furthermore, an earthquake may be accompanied by other man made and natural disasters in the course of events, and a multihazard mitigation and response plan will be necessary to deal with the related problems. The Committee felt that considerable cost savings could be achieved by fully utilizing information and planning in all the applicable emergency areas.

The Committee outlined several issues to be addressed by FEMA and directed the agency to conduct evaluative studies. To this date funds have not been appropriated to conduct the studies and FEMA has been unable to make adequate progress towards completing the studies.

The Committee restates the need for the multihazard approach and urges FEMA to complete the studies mandated by Public Law 96–472 and is authorizing $300,000 for the completion of this effort.

## TITLE II—MULTIHAZARD ACTIVITIES

### *Emergency First Response Program—United States Fire Administration*

The Committee recognizes that hardly a day passes that a disaster involving a train wreck, plane crash, tornado, flood, earthquakes, hazardous spill, radiological incident and fire does not occur somewhere in our country. Historically, the fire and rescue service has been the first on the scene with the training, equipment and experience from daily emergencies to assist in alleviating the destruction and disruption caused by such incidents. USFA has the unique opportunity to work with this major manpower resource and to accomplish, on the basis of risk definition, appropriate mitigation strategies for specific communities. Not only are the fire and rescue service the first responders in the event of a disaster, but they are the best available resource to recognize hazards before they happen through periodic inspections and natural familiarity with local areas.

Specifically this initiative identifies and packages emergency management options and tools suitable for use by the local fire departments. This is accomplished through close coordination with other FEMA components to identify appropriate programs for fire department implementation within the total emergency management picture.

Last year the Committee authorized the U.S. Fire Administration (USFA) for $20,815,000 for fiscal year 1982 and $23,312,000 for fiscal year 1983. The Emergency First Response program was authorized for $939,000 for fiscal year 1982. However, the fiscal year 1983 Administration's budget proposals do not include funding for the USFA in fiscal year 1983.

To this date, the Administration has not presented plans for continuing or arranging an orderly transfer of programs such as residential fire safety, public education, National Fire Data Center, fire fighter health and safety, Operation Dixieland, arson prevention and control and Emergency First Response program. The Committee is concerned about the future of a coordinated Federal fire prevention and control effort. Fire fighters, State and local officials, and community leaders have made us very aware of the need to continue the programs conducted by the USFA and have clearly demonstrated that the elimination of the USFA would be a short-sighted and counterproductive

move to achieving the goal of reducing this country's appalling loss of life and property in fires.

Again, the Committee is authorizing this portion of the USFA's request within the multihazard provision as the nucleus of a general emergency first response program applicable to all emergency services. For fiscal year 1983, the Committee is authorizing this program for $939,000.

TITLE II—MULTIHAZARD ACTIVITIES

*Planning, Preparedness and Mitigation Measures in Southern California and Other Areas of High Seismic Risk*

The Committee applauds the efforts of San Bernardino County, and the Southern California Emergency Preparedness Project. In conjunction with FEMA's support, there has been real progress made in establishing preparedness plans for a response to a catastrophic earthquake along the southern portion of the San Adreas fault. The plans are being developed to provide an appropriate reaction to a "prediction" of an earthquake as well to respond to an actual earthquake.

The Committee encourages FEMA to continue support of this effort and also to concentrate resources for planning preparedness and mitigation measures in other high seismic risk areas such as San Francisco and New Madrid, Missouri. The Committee recommends therefore that $1,535,000 of the $3,116,000 authorized for FEMA's earthquake program be dedicated for these programs.

SECTION-BY-SECTION ANALYSIS

TITLE I—EARTHQUAKE HAZARDS REDUCTION PROGRAM

*Section 101(a)*

Amends Section 7(a) by authorizing $1,281,000 for the fiscal year ending September 30, 1983, and such sums as may be necessary for the fiscal year ending September 30, 1984, to the Director of FEMA to carry out sections 5 and 6 of the Earthquake Hazards Reduction Act.

*Section 101(b)*

Amends section 7(b) by authorizing $33,843,000 for the fiscal year ending September 30, 1983, and such sums as may be necessary for the fiscal year ending September 30, 1984 to the U.S. Geological Survey.

*Section 101(c)*

Amends section 7(c) by authorizing $25,000,000 for the fiscal year ending September 30, 1983, and such sums as may be necessary for the fiscal year ending September 30, 1984 to the National Science Foundation.

*Section 101(d)*

Amends section 7(d) by authorizing $475,000 for the fiscal year ending September 30, 1983; and such sums as may be necessary for the fiscal year ending September 30, 1984 to the National Bureau of Standards.

*Section 101(e)*

Amends section 7(e) by extending authorization for appropriation of further sums for adjustments required by law for each of the fiscal years ending September 30, 1982, September 30, 1983 and September 30, 1984.

TITLE II—MULTIHAZARD RESEARCH, PLANNING, AND MITIGATION

*Section 201*

Amends Section 302 of Public Law 96–472 by authorizing $2,774,000 to carry out section 301. This includes not less than $300,000 to carry out paragraphs (1) through (6) of section 301; not less than $939,000 for use by the United States Fire Administration, as stated in paragraph (7); not less than $1,535,000 to carry out paragraph (8) of such section with respect to the large California earthquakes which were identified by the National Security Council's Ad Hoc Committee on Assessment of Consequences and Preparations for a major California earthquake and with respect to the high seismic risk areas in the United States; and such further sums as required by law to carry out the purposes of paragraph (8).

Section 201 further amends Section 302 of Public Law 96–472 by providing for such further sums as may be necessary for adjustments required by law for adjustments in salaries, pay, retirement, and employee benefits incurred in the conduct of activities for which funds are authorized by paragraph (1) of this subsection.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

SECTION 7 OF THE EARTHQUAKE HAZARDS REDUCTION ACT OF 1977

**SEC. 7. AUTHORIZATION OF APPROPRIATIONS.**

(a)(1) GENERAL.—There are authorized to be appropriated to the President to carry out the provisions of sections 5 and 6 of this Act (in addition to any authorizations for similar purposes included in other Acts and the authorizations set forth in subsections (b) and (c) of this section), not to exceed $1,000,000 for the fiscal year ending September 30, 1978, not to exceed $2,000,000 for the fiscal year ending September 30, 1979, and not to exceed $2,000,000 for the fiscal year ending September 3, 1980.

(2) There are authorized to be appropriated to the Director to carry out the provisions of sections 5 and 6 of this Act for the fiscal year ending September 30, 1981—

(A) $1,000,000 for continuation of the Interagency Committee on Seismic Safety in Construction and the Building Seismic Safety Council programs,

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(B) $1,500,000 for plans and preparedness for earthquake disasters,

(C) $500,000 for prediction response planning,

(D) $600,000 for architectural and engineering planning and practice programs,

(E) $1,000,000 for development and application of a public education program,

(F) $3,000,000 for use by the National Science Foundation in addition to the amount authorized to be appropriated under subsection (c), which amount includes $2,400,000 for earthquake policy research and $600,000 for the strong ground motion element of the siting program, and

(G) $1,000,000 for use by the Center for Building Technology, National Bureau of Standards in addition to the amount authorized to be appropriated under subsection (d) for earthquake activities in the Center.

(3) There are authorized to be appropriated to the Director for the fiscal year ending September 30, 1982, $2,000,000 to carry out the provisions of sections 5 and 6 of this Act.

(4) *There are authorized to be appropriated to the Director, to carry out the provisions of sections 5 and 6 of this Act, $1,281,000 for the fiscal year ending September 30, 1983, and such sums as may be necessary for the fiscal year ending September 30, 1984.*

(b) GEOLOGICAL SURVEY.—There are authorized to be appropriated to the Secretary of the Interior for purposes for carrying out, through the Director of the United States Geological Survey, the responsibilities that may be assigned to the Director under this Act not to exceed $27,500,000 for the fiscal year ending September 30, 1978; not to exceed $35,000,000 for the fiscal year ending September 30, 1979; not to exceed $40,000,000 for the fiscal year ending September 30, 1980; $32,484,000 for the fiscal year ending September 30, 1981; [and] $34,425,000 for the fiscal year ending September 30, 1982; *$33,843,000 for the fiscal year ending September 30, 1983; and such sums as may be necessary for the fiscal year ending September 30, 1984.*

(c) NATIONAL SCIENCE FOUNDATION.—To enable the Foundation to carry out responsibilities that may be assigned to it under this Act, there are authorized to be appropriated to the Foundation not to exceed $27,500,000 for the fiscal year ending September 30, 1978; not to exceed $35,000,000 for the fiscal year ending September 30, 1979; not to exceed $40,000,000 for the fiscal year ending September 30, 1980; $26,600,000 for the fiscal year ending September 30, 1981; [and] $27,150,000 for the fiscal year ending September 30, 1982; *$25,000,000 for the fiscal year ending September 30, 1983; and such sums as may be necessary for the fiscal year ending September 30, 1984.*

(d) NATIONAL BUREAU OF STANDARDS.—To enable the Bureau to carry out responsibilities that may be assigned to it under this Act, there are authorized to be appropriated $425,000 for the fiscal year ending September 30, 1981; [and] $425,000 for the fiscal year ending September 30, 1982; *$475,000 for the fiscal year ending September 30, 1983; and such sums as may be necessary for the fiscal year ending September 30, 1984.*

(e) FUNDS FOR CERTAIN REQUIRED ADJUSTMENTS.—For [the fiscal year ending September 30, 1982] *each of the fiscal years ending September 30, 1982, September 30, 1983, and September 30, 1984*, there are authorized to be appropriated such further sums as may be necessary for adjustments required by law in salaries, pay, retirement, and employee benefits incurred in the conduct of activities for which funds are authorized by the preceding provisions of this section.

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SECTION 302 OF PUBLIC LAW 96-472

SEC. 302. (a) For the fiscal year ending September 30, 1981, there are authorized to be appropriated to the Director $1,000,000 to carry out paragraphs (1) through (5) of section 301 and such sums as may be necessary to carry out paragraph (6) of such section.

(b) For the fiscal year ending September 30, 1982, there are authorized to be appropriated to the Director—

(1) $4,939,000 to carry out section 301, which amount shall include—

(A) not less than $700,000 to carry out the purposes of paragraphs (1) through (6) of such section;

(B) such sums as may be necessary, but in any case not less than $939,000, for use by the United States Fire Administration in carrying out paragraph (7) of such section; and

(C) not less than $3,300,000 to carry out paragraph (8) of such section with respect to those large California earthquakes which were identified by the National Security Council's Ad Hoc Committee on Assessment of Consequences and Preparations for a Major California Earthquake; and

(2) such further sums as may be necessary for adjustments required by law in salaries, pay, retirement, and employee benefits incurred in the conduct of activities for which funds are authorized by paragraph (1) of this subsection.

*(c) For the fiscal year ending September 30, 1983, there are authorized to be appropriated to the Director—*

*(1) $2,774,000 to carry out section 301, which amount shall include—*

*(A) not less than $300,000 to carry out the purposes of paragraphs (1) through (6) of such section;*

*(B) such sums as may be necessary, but in any case not less than $939,000, for use by the United States Fire Administration in carrying out paragraph (7) of such section; and*

*(C) not less than $1,535,000 to carry out paragraph (8) of such section with respect to those large California earthquakes which were identified by the National Security Council's Ad Hoc Committee on Assessment of Consequences and Preparation for a Major California Earthquake and with respect to other high seismic risk areas in the United States; and*

*(2) such further sums as may be necessary for adjustments required by law in salaries, pay, retirement, and employee benefits incurred in the conduct of activities for which funds are authorized by paragraph (1) of this subsection.*

### Oversight Activities

Pursuant to Clause 2(1)(3)(A), Rule XI, and under the authority of Rule X, Clause 2(b)(1) and Clause 3(f), of the Rules of the House of Representatives, the following statement on oversight activities is made.

The Committee's oversight findings and recommendations are contained in the body of this report.

### Oversight Findings and Recommendations by the Committee on Government Operations

Pursuant to Rule X, Clause 2(b)(2) and Rule XI, Clause 2(1)(3)(d) of the Rules of the House of Representatives, the following oversight findings and recommendations made by the Committee on Government Operations have been received: No statement of findings and recommendations was received as of May 17, 1982.

### Congressional Budget Act Information

The bill provides for new authorization rather than new budget authority and consequently the provisions of Section 308(a) of the Congressional Budget Act of 1974 are not applicable.

### Cost Estimate—Congressional Budget Office

U.S. Congress,
Congressional Budget Office,
*Washington, D.C., May 14, 1982.*

Hon. Don Fuqua,
*Chairman, Committee on Science and Technology, U.S. House of Representatives, Washington, D.C.*

Dear Mr. Chairman: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached cost estimate for H.R. 6272, a bill to amend the Earthquake Hazards Reduction Act of 1977 to extend authorization for appropriations, and for other purposes.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely,

Alice M. Rivlin,
*Director.*

CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE

MAY 14, 1982.

1. Bill number: H.R. 6272.

2. Bill title: A bill to amend the Earthquake Hazards Reduction Act of 1977 to extend authorization for appropriations, and for other purposes.

3. Bill status: As ordered reported by the House Committee on Science and Technology, May 13, 1982.

4. Bill purpose: This bill authorizes the appropriation of specific sums in fiscal year 1983 for programs in four agencies (the Federal Emergency Management Agency, the U.S. Geological Survey, the National Science Foundation, and the National Bureau of Standards) and further authorizes such sums as may be necessary for these programs in fiscal year 1984. The bill also authorizes the appropriation of specific sums for the multihazard research planning and mitigation program for fiscal year 1983 only.

In addition to the specific sums authorized for each of these programs, the bill authorizes the appropriation of such sums as may be necessary for adjustments required by law in salaries, pay, retirement, and employee benefits incurred as a result of activities authorized by the bill.

5. Cost estimate:

| | *Millions* |
|---|---|
| **Estimated authorization level:** | |
| **Fiscal year:** | |
| 1983 | $64.4 |
| 1984 | 66.3 |
| 1985 | ---- |
| 1986 | ---- |
| 1987 | ---- |
| **Estimated outlays:** | |
| **Fiscal year:** | |
| 1983 | 43.2 |
| 1984 | 59.3 |
| 1985 | 20.4 |
| 1986 | 6.6 |
| 1987 | 1.3 |

The costs of this bill fall within budget subfunction 453.

6. Basis of estimate: For the purposes of this estimate, it was assumed that the funds authorized by the bill are appropriated prior to the start of fiscal year 1983 and that all funds would be obligated and disbursed at rates similar to recent experience at the FEMA and other responsible agencies. Funding for fiscal year 1984 has been estimated to be the amount needed in that year, adjusted for inflation, to fund a program identical to that authorized for fiscal year 1983. Approximately $1.0 million has been added to the 1983 base authorizations specifically to provide for pay adjustments authorized by section 101(e) of the bill, based on CBO baseline projections for federal pay increases.

7. Estimate comparison: None.

8. Previous CBO estimate: On May 14, 1982, the Congressional Budget Office prepared a cost estimate for H.R. 6272, as ordered reported by the House Committee on Interior and Insular Affairs. That bill is identical to this bill.

9. Estimate prepared by: Linwood T. Lloyd.
10. Estimate approved by:

C. G. NUCKOLS,
(For James L. Blum,
Assistant Director for Budget Analysis).

COST AND BUDGET DATA

The bill would authorize appropriations for Fiscal Year 1983 in the amount of $63,373 million for the Earthquake Hazards Reduction and Multihazard Planning, Research and Mitigation Programs conducted at FEMA, USGS, NSF, and NBS. If these programs authorized under this bill remain unchanged over the next five years, there will only be changes occasioned by inflation at the rate of 12% per year under the best current estimates of the Committee. These programs and policies with FEMA, USGS, NSF, and NBS may undergo changes which could substantially increase or decrease the earthquake hazards reduction and multihazard research, planning and mitigation programs over the next 5 years. When and how such changes might occur cannot be foreseen at this time.

EFFECT OF LEGISLATION ON INFLATION

In accordance with Rule XI clause 2(1)(4) of the Rules of the House of Representatives, this legislation has been assessed to have no detectable inflationary impact on prices and costs in the national al economy in the immediate future. Over the longer term, the programs in earthquake hazard reduction and multihazard research, planning and mitigation should decrease pressures on costs and prices by reducing loss of property, disruption of the businesses community, and medical losses associated with fires, earthquakes and other man-made and natural hazards. In addition, the research sponsored by this authorization should lead to more efficient and effective operations of the nation's emergency planning, response and fire services thus reducing unnecessary costs to cities, towns and states.

COMMITTEE RECOMMENDATION

The bill was ordered reported on May 13, 1982 by unanimous voice vote, a quorum being present.

ADMINISTRATION VIEWS

The following letter from the Office of the Secretary of the Interior accompanied a draft legislative proposal recommended by the Administration.

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D.C., March 9, 1982.*

Hon. THOMAS P. O'NEILL, JR.,
*Speaker of the House of Representatives,*
*Washington, D.C.*

DEAR MR. SPEAKER: Enclosed is a draft bill "To amend section 7 of the Earthquake Hazards Reduction Act of 1977 (91 Stat. 1098,

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1102; 42 U.S.C. 7701, 7706) to extend authorizations for appropriations, and for other purposes."

We recommend that the bill be referred to the appropriate Committee for consideration, and that it be enacted.

These proposed amendments to the Earthquake Hazards Reduction Act of 1977 would authorize appropriations for the amounts requested in the President's budget for fiscal year 1983, and for "such sums as may be necessary to carry out the purposes" of the Act for fiscal year 1984. The amendments would allow a two-year continuation of the efforts already begun under the Act by the Federal Emergency Management Agency, the U.S. Geological Survey, the National Bureau of Standards, and the National Science Foundation.

The objective of the Earthquake Hazards Reduction Act of 1977 "To reduce the risks of life and property from further earthquakes in the United States" is necessarily long range. For example, studies evaluating and delineating earthquake hazards have been ongoing for a number of years. As a result, we have, today, a much greater understanding of the threat of earthquakes. However, further research and monitoring—especially in light of increased seismicity in California—are needed over the next few years. We believe that the two-year authorization for appropriations in this draft bill will allow multi-year planning and will provide program stability which will best assure attainment of the Act's objective of earthquake hazards reduction.

The Office of Management and Budget has advised that enactment of this legislation would be in accord with the program of the President.

Sincerely,

DAN MILLER,
*Assistant Secretary.*

Enclosures.

A BILL To amend section 7 of the Earthquake Hazards Reduction Act of 1977 (91 Stat. 1098, 1102; 42 U.S.C. 7701, 7706) to extend authorizations for appropriations, and for other purposes

*Be it enacted by the Senate and House of Representatives of the United States in Congress assembled*, That paragraph (3) of subsection (a) of section 7 of the Earthquake Hazards Reduction Act of 1977 (hereinafter referred to as the "Act") (91 Stat. 1098, 1102; 42 U.S.C. 7701, 7706) is amended by striking out the period at the end theerof, and by adding "; for the fiscal year ending September 30, 1983, $3,116,000; and for the fiscal year ending September 30, 1984, such sums as may be necessary to carry out the purposes of this Act.".

SEC. 2. Subsection (b) of section 7 of the Act is amended by striking out "and" after "1981;" and by inserting "; $30,843,000 for the fiscal year ending September 30, 1983; and such sums as may be necessary to carry out the purposes of this Act for the fiscal year ending September 30, 1984" before the period at the end thereof.

SEC. 3. Subsection (c) of section 7 of the Act is amended by striking out "and" after "1981;" and by inserting "; $25,000,000 for the fiscal year ending September 30, 1983; and such

sums as may be necessary to carry out the purposes of this Act for the fiscal year ending September 30, 1984'" before the period at the end thereof.

SEC. 4. Subsection (d) of section 7 of the Act is amended by striking out "and" after "1981;" and by inserting "; $475,000 for the fiscal year ending September 30, 1983; and such sums as may be necessary to carry out the purposes of this Act for the fiscal year ending September 30, 1984'" before the period at the end thereof.

## SECTION-BY-SECTION ANALYSIS

### SECTION 1

Authorizes appropriations of $3,116,000 for the fiscal year ending September 30, 1983, and such sums as may be necessary for the fiscal year ending September 30, 1984, to the Director of the Federal Emergency Management Agency (FEMA) to carry out the provisions of sections 5 (42 U.S.C. 7704 (National Earthquake Hazards Reduction Program)) and 6 (42 U.S.C. 7705 (Annual Report to Congressional Committees)) of the Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7701 et seq.).

### SECTION 2

Authorizes appropriations of $30,843,000 for the fiscal year ending September 30, 1983, and such sums as may be necessary for the fiscal year ending September 30, 1984, to the Secretary of the Interior for the purposes of carrying out, through the Director of the United States Geological Survey, the responsibilities that may be assigned to the Director under the Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7701 et seq.).

### SECTION 3

Authorizes appropriations of $25,000,000 for the fiscal year ending September 30, 1983, and such sums as may be necessary for the fiscal year ending September 30, 1984, to enable the National Science Foundation to carry out the responsibilities that may be assigned to it under the Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7701 et seq.).

### SECTION 4

Authorizes appropriations of $475,000 for the fiscal year ending September 30, 1983, and such sums as may be necessary for the fiscal year ending September 30, 1984, to enable the National Bureau of Standards to carry out the responsibilities that may be assigned to it under the Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7701 et seq.).

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